MEMORANDUM

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To: John Zahina, SFWMD project manager for Lake Istokpoga MFL

From: Thomas E. Lodge

Date: July 1, 2005

Subject: Review of the first draft Technical Documentation to Support Development of Minimum Levels for Lake Istokpoga, SFWMD Water Supply Department, May 2005

Overview

This draft document presents a reasonable approach to the question of minimum level criteria to protect Lake Istokpoga from significant harm. There is a sufficient presentation of the lake's characteristics and uses to give the reader an adequate basis for understanding the potential impact of low levels. The data presented to support the draft MFL varies from very good (e.g. the level chosen roughly follows the lower elevation contour of the lake's existing emergent littoral zone) to weak (e.g. game fishery data used to evaluate the 2001 lake drawdown and a lack of specific data in support of an alleged deleterious succession of the littoral zone if longer or more frequent low levels would occur). However, while there were some shortcomings in the data used to develop the draft MFL criteria, nothing presented would support a contrary conclusion regarding the proposed MFL criteria. It is my opinion that the selected MFL criteria would protect Lake Istokpoga from significant harm.

General review of the entire document

1. *Does the MFL document present a defensible scientific basis for setting initial minimum flows and levels within this water resource? Are the approaches or concepts described in the document scientifically sound based on "best available information"?*

The basis used is scientifically defensible in that the following were considered: water quality; recreation and navigational access; fish and wildlife habitat; gamefish population rebound; and wetland/littoral zone succession and upland encroachment. However, many details were lacking that would improve scientific credibility, including adequate

documentation of wading bird success, specific littoral zone successional expectations, especially involving cypress and the apparent current lack of successful recruitment among the larger, old cypress in the deeper portions of their habitat. While the littoral zone functions and successional processes may be beyond the scope of establishing MFL criteria (i.e. the entire fluctuation schedule as being examined in CERP is involved), there at least needs to be clear justification on why they are beyond the scope. Water quality is only briefly addressed as being beyond possible control by the MFL criteria, but more specific statements could have been made, such as the exterior loadings are not affected by MFL criteria.

2. *Are the proposed criteria logically supported by "best available information" presented in the main body of the document? What specific additions, deletions or changes are recommended by the expert to enhance the validity of the document?*

Much of the science alluded to in establishing the MFL criteria are limited and vague, although logically aimed toward good science. For example, health of the swamp community around Lake Istokpoga addresses only the community above elevation 39.5 ft. NGVD. Our field excursion on June 28, when the lake stage was reportedly at 38.4 ft., evidenced that most if not nearly all of the spectacular, old cypress were standing in water, so that they were probably mostly between 37 and 38 ft. There was no apparent recruitment among them. This very important aesthetic and functional role (e.g. support of huge numbers of osprey nests) that the older cypress play begs more documentation. Cypress recruitment data are available in literature sources.

The single drydown event that serves as the backbone of support for the MFL is too limited. Drydown studies on Florida lakes are abundant, including lakes Toho, Kissimmee, and Okeechobee, and could have been referenced for supporting documentation.

Additional concerns for the selected criteria are what would happen in the event that water levels would drop to very low levels within the allowed duration of 20 weeks. For example, the criteria would allow the lake to go completely dry so long as the excursion below 36.5 ft. was less than 20 weeks. While the probability of such an extreme is remote, possible very low excursions should be addressed in the document. However, it is recognized that the use of the established criteria is in judging the permitability of a requested consumptive use of water. As such, it is improbable that the impact of very low excursions of water level would be realistic. Such calculated low levels would obviously tend to violate the 20 week recovery time and not be permitted under the draft criteria.

3. *Are there other approaches to setting the criteria that should be considered? Is there available information that has not been considered by the authors? If so, please identify specific alternatives to setting the MFLs and the data available to validate the alternative approach.*

The approach taken is sound. It merely needs additional supporting documentation as emphasized above.

Specific editorial comments by page numbers

Page iii. Significant harm is referenced in Chapter 373 requirements to include flood control, water quality protection, water supply and storage, fish and wildlife protection, navigation and recreation. However, on page iv, it is stated that significant harm "…for Lake Istokpoga is based primarily on impacts to the lake's biological resources…." The basis of not including the broader suite of categories needs a clearer explanation.

Page 14, second paragraph. The "Paleogene Epoch" should be changed to the "Paleogene epochs" as it represents the combined time of the Paleocene, Eocene, and Oligocene epochs.

Pages 24 (bottom) and 25. The text data do not all agree with the Figure 14. For examples, at 35 ft. the lake volume on Figure 14 is 48,075 ac-ft., not 62,500 ac-ft.; and neither graph extends to 43 ft. as inferred in the text.

Page 39, Table 6. The eastern mosquitofish is *Gambusia holbrooki*; the tadpole "darter" should be the tadpole madtom; and both bullheads listed are now in the genus *Ameiurus*, not *Ictalurus*. Also, a table in a paper by Furse, Champeau, Ford and others dated August 26, 2004 (presented at the Lake Istokpoga performance measures science review panel workshop of that date) included the following additional species, several of which may be important ecologically: blue tilapia (*Oreochromis aurea*), bowfin (*Amia calva*), brown hoplo (*Hoplosternum littorale*), channel catfish (*Ictalurus punctatus*), sailfin molly (*Poecilia latipinna*), walking catfish (*Clarias batrachus*), and white catfish (*Ameiurus catus*). A local resident brought a photograph of a brown hoplo to the MFL workshop and stated his observation of its nesting habit and difficulty in predation by ospreys.

Page 42, Plants and Animals of Special Concern. There is no mention of the snail kite – it should be included.

Page 52, first paragraph. I found no citations for the burhead sedge (*Osycaryum cubense*) until I discovered it as a synonym for the current name, Cuban bulrush (*Scirpus cubensis*). I suggest the latter names be used or referenced as synonyms.

Page 54, first paragraph last line. The proper name for the referenced aquifer is "Floridan" aquifer.

Page 83, second paragraph. I disagree that addressing environmental impacts from water level stabilization is beyond the project's scope. *Significant harm* of low water is relative to level fluctuations, and therefore tied to the history of fluctuation stabilization. Setting the level at the low elevation of the existing emergent littoral zone addresses the

situation, so I think that the document and selected MFL are still valid, but the wording should reflect that setting a low level is relative to fluctuations that are ongoing and have caused harm by being too restrictive – thus the importance of the MFL being set below the existing control schedule.

Page 98, bottom paragraph. "…the annual average hydroperiod for lake wetlands may be reduced below the typical range for these community types." This statement is so vague and general that it value is limited. There is much more specific information available from other lake drawdowns that could be cited. I suggest this statement be reworded to reflect fishery recovery time and perhaps excessive interference with navigation and recreation, unless specific deleterious effects on littoral zone communities can be documented/referenced.